REMARKS/ARGUMENTS

Favorable consideration of this Application and in light of the following discussion is respectfully requested.

Claims 3-5, 8-13, 18 and 19 are pending in the present application. Claim 20 is cancelled and Claims 18 and 19 are amended by the present amendment without the introduction of any new matter. Support for the amendments to the claims can be found in the specification as originally filed, for example in paragraphs [0044]. Thus, no new matter is added.

In the outstanding Office Action, Claims 3-5, 8-13 and 18-19 were rejected under 35 U.S.C. §103(a) as unpatentable over Applicants admitted prior art (herein AAPA) in view of Tamagawa et al. (JP 2001-148371, herein "Tamagawa"), Craig A. Phelps (U.S. Pat. No. 5,724,234, herein "Phelps") and Hannigan et al. (U.S. Pat. No. 5,999,091, herein "Hannigan") as evidenced by Soloman (Sensors Handbook, 1999) and Shimamura et al. (U.S. Pat. No. 5,707,500, herein "Shimamura"); and Claim 20 was rejected under 35 U.S.C. §103(a) as unpatentable over AAPA, Tamagawa, Craig A. Phelps, Hannigan in further view of Bowers et al. (U.S Pat. No. 5,680,025, herein "Bowers").

Addressing now the rejection of Claims 3-5, 8-13 and 16-19 under 35 U.S.C. §103(a) as unpatentable over AAPA, Tamagawa, Craig A. Phelps, Hannigan, Soloman and Shimamura, that rejection is respectfully traversed.

Claim 18 recites,

> A temperature measuring method of measuring a temperature of a susceptor which is disposed in a conductive vessel and on which a substrate to be processed is to be placed, the conductive vessel being set to a ground potential and having a space formed therein in which a plasma is generated by application of a radio frequency power, the method comprising:
>
> forming an opening in a portion of the conductive vessel facing a predetermined temperature measured portion on a rear face side of the susceptor, the opening having a diameter

> of 1/50 or less of a wavelength of the radio frequency power; and
>
> detecting, at an external part of the opening, an infrared ray emitted from a temperature measurement hole to measure the temperature of the susceptor by a radiation thermometer,
>
> wherein said susceptor is formed of an aluminum so that a top portion of said opening is anodized to be a sulfuric acid hard anodized aluminum so as to act as a blackbody to the infrared ray, and
>
> wherein said radiation thermometer closes the opening of the conductive vessel.

Claim 19 recites similar features with regard to the use of sulfuric acid hard anodized aluminum.

AAPA describes a method of temperature measurement of a susceptor disposed in a conductive vessel of anodized aluminum set to ground potential and having a space formed therein in which the plasma is generated by the application of the radio frequency power of 40MHz, 60MHz and 100MHz.

Tamagawa describes the use of an infrared thermometer for temperature measurement of a sample in a plasma etching chamber through a drilled hole.

Craig A. Phelps describes that RF power leaks through openings of a size greater than the wavelength of the radio frequency and that to counter this effect any opening should be 1/20 of the wavelength.

However, the combination of AAPA, Tamagawa and Craig A. Phelps does not describe or suggest that the susceptor is formed of aluminum so that a top portion of said opening is anodized to be a sulfuric acid hard anodized aluminum so as to act as a blackbody to the infrared ray.

As is noted in Soloman, the ideal black body has an emissivity of 1.0 while the total emissivity of oxidized aluminum is 0.11.[1] In view of the low emissivity of the oxidized aluminum, this type of aluminum should be considered to be a soft anodized aluminum

[1] see Soloman, sections 84.2 and 84.3.

because a hard anodized aluminum would exhibit a larger emissivity than 0.11. In contrast, the claimed sulfuric acid hard anodized aluminum exhibits an emissivity of 0.93 which is almost equal to the emissivity of the ideal black body. However, Soloman does not describe or suggest hard anodized aluminum, particularly the sulfuric acid hard anodized aluminum as is recited in the claimed invention.

The outstanding Action also relies on Hannigan as curing the deficiencies of AAPA, Tamagawa and Craig A. Phelps with regard to the claimed invention.

Hannigan describes a temperature measurement system. In addition, Hannigan describes that a blackbody surface can be achieved by anodized aluminum made by means of a hard anodizing. However, Hannigan does not describe or suggest a sulfuric acid hard anodized aluminum with an emissivity substantially equal to the emissivity of the ideal black body as is found in the claimed invention. In addition, although hard anodized aluminum can exhibit a larger emissivity than oxidized aluminum, hard anodized aluminum like that described in Hannigan does not exhibit an emissivity as large as the emissivity of the sulfuric acid hard anodized aluminum recited in the claimed invention.

Thus, Hannigan does not describe or suggest sulfuric acid hard anodized aluminum as is recited in the claimed invention.

Moreover, Shimomura do not cure the deficiencies of AAPA, Tamagawa, Craig A. Phelps, Soloman and Hannigan with regard to this feature.

In addition, for purposes of reference, Applicants wish to provide a non-limiting example of how the sulfuric acid hard anodized aluminum can be made. For instance, the anode electrode made of aluminum can be disposed in an acid solution such as a sulfuric acid solution or an oxalic acid solution which is kept within a temperature range of 0 to 5 degrees C and a direct current is directed, under the condition of a larger current density, in the acid solution via the anode electrode so as to cause a reaction in oxygen decomposed from water

and aluminum. In addition, a porous oxidized aluminum film with large electric insulation is formed on the surface of the anode electrode. The porous oxidized aluminum file is exposed to a moisture vapor set at high temperature under high pressure so as to fill the pores of the oxidized aluminum film and, thus, impart the corrosion resistance thereto.

Accordingly, Applicants respectfully submit that Claims 18 and 19, and claims depending therefrom, patentably distinguish over AAPA, Tamagawa, Craig A. Phelps, Hannigan, Soloman and Shimamura considered individually or in any proper combination.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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